Are the debt-equity swaps an opportunity to finance partially the Nepad? Some evidences from a theoretical model

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Bio-sketch

Abdrahmane Wane is an economist (PhD in Economics at the University of Paris-Dauphine at the field of debt-equity swaps in Latin America). His most significant professional experiences were acquired in the higher education in France and the development-oriented research in West Africa. He was part-time lecturer in development economics and corporate finance respectively at the University of Sorbonne Nouvelle and the Management School of Leonard de Vinci (France). In Senegal, recruited by the CIRAD (French Agricultural Research Centre for International Development), initially as post doctorate then researcher position in Economics, he had during nearly five years, to work on the Economics of Pastoralism within which the fight against inequalities and vulnerability, constitutes one of the major topics.

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Abstract:

The adoption of the New Partnership for the Development of Africa (Nepad) in 2001 ensured the clarification of the priorities which underlie this initiative which tries to be global and integrated. One of them is based on the reduction of debt and the stimulation of the FDI. Our contribution tries to link these two objectives through the implementation of the debt-equity swaps mechanisms. Despite the controversies which characterize them, we re-examine these market solutions and determine the allocation of resources between the different participants to these transactions through a theoretical model inspired by Helpman (1989) and Bowe & Dean (1993).

Keywords: Nepad, debt reduction, FDI, debt-equity swaps, resource allocation, modelling

JEL classification codes: F21 F34 F36 G15 H63

Introduction

Drawn up by five African heads of state and taken up in July 2001, the New Partnership for the Development of Africa (Nepad) proposes a view and a strategic framework for the fight against poverty and the establishment of sustained conditions of economic growth and development. Among the defined priorities, a central role is devoted to the mobilisation of financial resources particularly for the reduction of the external debts and massive inward foreign direct investments (FDI) flows.

The idea which would seem to prevail is based on dissociation between the reduction of debts and the appeal of the foreign direct investments. An alternative shift consists to adjoin to any debt reduction, a counterpart aiming at giving impetus to a process of economic growth. This approach which is the cornerstone of the debt-equity swaps has been implemented since the beginning of the eighties successfully in Chile which is a country which was subjected to combined action of over borrowing and the growing shortage of the FDI.

The attempts of generalised extrapolation of these mechanisms in Africa come up *a priori* against a certain number of constraints (differences in the nature of the debts, absence of financial markets allowing the quotation of the debts and their conversions, lack of concrete perspectives of investments). However, the eligibility for the conversions of the debts of the Club of Paris from 1991 (Eclac, 1999) constitutes a real opportunity for launching again the idea of a large establishment of the debt-equity swaps in Africa by including it in the strategic framework of the Nepad.

The objective of this paper is to analyse the relevance of such a perspective in sub-Saharan Africa through theoretical model and to study the impacts of these mechanisms in terms of the allocation of resources which are oriented towards integrative and federator programmes like the Nepad initiative.

As a starting point, we stress out the interest in taking up the debt-equity swaps mechanisms by analysing again the dynamics of indebtedness and investment in sub-Saharan countries. In the second part, we establish a theoretical model centred on the debt-equity swaps and describe the repartition of the resources between the different actors of transactions particularly the debtor countries.

I- Foreign debt and FDI in Africa: necessity for a combined solution?

The Nepad constitutes a great leap in terms of content, objectives and procedure of implementation[1]. One of the asserted priorities of this global initiative goes inexorably through a reduction of a certain category of debts and a stimulation of the FDI flows. Beforehand, what is the real point about the situation of indebtedness of Sub-Saharan Africa?

I-1/ The Debt of African countries: a burden which should be put into perspective

Even if the Nepad is intended to a strategic framework to the whole African countries, we will focus on the case which is *a priori* the most critical of the sub-Saharan debt.

Table 1: Sub-Saharan Africa - Total External Debt and Conditions of Loans

Millions US $	**1990-1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Total external debt stocks	**209**	**211**	**203**	**212**	**231**	**238**	**215**	**173**
Use of IMF credit	7	7	6	7	7	7	6	3
Short-term debt outstanding	34	32	31	28	30	33	32	35
Long-term debt outstanding (1)	167	173	166	177	194	198	177	134
(1) Decomposition of the long-term debt (billions USD and percent)								
Long-term debt outstanding	**160**	**163**	**156**	**166**	**183**	**185**	**166**	**127**
Private nonguaranteed	1%	1%	1%	1%	2%	1%	1%	9%
Public & publicly guaranteed (2)	99%	99%	99%	99%	98%	99%	99%	91%
(2) Decomposition of the public and publicly guaranteed debts (billions USD and percent)								
Public and publicly debt	**134**	**147**	**142**	**151**	**168**	**170**	**147**	**105**
Official creditors (3)	94%	92%	91%	92%	91%	92%	91%	82%
Private creditors (4)	6%	8%	9%	8%	9%	8%	9%	18%
(3) Decomposition of the debt due to official creditors (billions USD and percent)								
Official creditors	**126**	**135**	**130**	**139**	**153**	**156**	**134**	**86**
Bilateral debt	61%	60%	58%	56%	55%	51%	45%	49%
Multilateral debt	39%	40%	42%	44%	45%	49%	55%	51%
(4) Decomposition of the debt due to private creditors (billions USD and percent)								
Private creditors	**29**	**18**	**18**	**19**	**23**	**25**	**28**	**31**
Bonds	1%	8%	14%	20%	36%	35%	32%	33%
Commercial banks	40%	46%	39%	38%	32%	41%	48%	49%
Other private creditors	59%	46%	47%	42%	32%	24%	20%	18%

Source: Author on World Bank data. Global Development Finance. 2008

During the nineties and the years 2000, the stock of the debt of sub-Saharan Africa is set on a basic yearly average of about 211 billion USD. The evolution of the foreign debt is understandable because of the preponderance of the long-term part which reaches 82 percent of the global stock, i.e. 173 billion USD on average whereas the short-term part is 15 percent, i.e. 32 billion USD. In addition, the sub-Saharan debt is characterised by the little recourse to the lines of credit of IMF (3 percent on average) which would be understandable because of the difficulty in submitting to the terms laid down by this institution.

The examination of the long-term foreign debt, main elements of the total external debt, shows important aspects. First, the part of the public debt which is publicly guaranteed almost reaches 98

1 A good synthesis of the Nepad is provided in NEPAD (2001), NEPAD (2002 a-e), African Union (2002), Franke et Nsouli (2003)

percent, i.e. 160 billion USD on average with a small decline in 2006. Secondly, the official creditors have about 9/10 of the global debt and they only let the balance to the private creditors even if the part of these latter has grew more than usual in 2006. The fact that the debt is basically from an official source makes it less vulnerable to sharp cancellation of refinancing of the main one. Thirdly, the debt of sub-Saharan Africa remains more bilateral rather than multilateral even if a trend reversal appears progressively. The multilateral part is deeply dominated by compromising debts which remain more important during this period. The primacy of the multilateral debt and the official bilateral one would suggest that the search for solution would be in function of the political considerations of the creditor countries. Fourthly, the private creditors which are the minority initially dominated by the other private creditors[2] (59 percent) between 1990 and 1999, see that the role of these latter diminishes progressively to reach 18 percent in 2006. This decline occurs above all for the benefit of holders of bonds and commercial banks (33 and 49 percent in 2006).

A subtle analysis of the Sub-Saharan debt would be to its advantage to examine the effective burden it constitutes. To try to explain the burden of the debt through the debt service does not seem to be appropriate because this latter takes into account the principal. It appears less precise than the ratio of the payments of interests to the exports of goods and services as the principal is completely « rollover » for most of the countries. Even if a cancellation of the refinancing of the principal by the official creditors can occur because of inappropriate national economic policies, at this moment, the problem would not be related to the burden of the debt but rather to the lack of appropriate reforms.

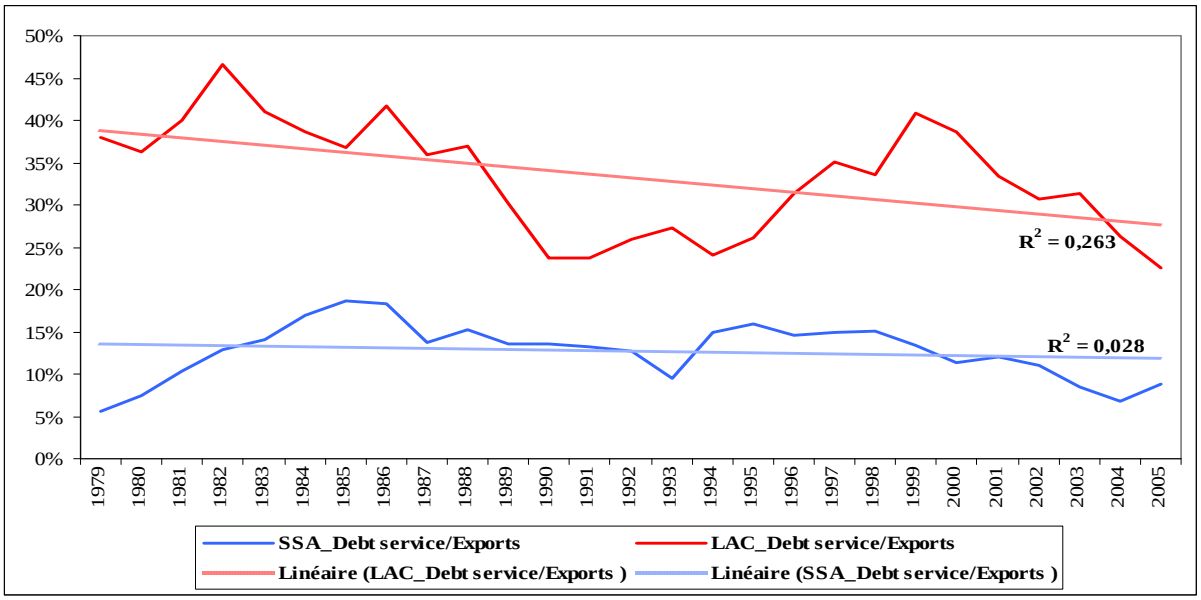

Figure 1: Comparison ratios of debt service on exports of goods and services between Sub Saharan Africa (SSA) and Latin America and the Caribbean (LAC)
Source: Author on World Bank data. Global Development Finance. 2008

2 It is about industrials, exporting countries, other assets and bank credit exporting guaranteed by an agency of export credit (definition by World Bank, 2004).

Like William Cline (1994), we consider that it would be more useful to see what the country spends really as far as its international commitments are concerned. A suitable indicator would be then the ratio of payments of interests on the debt related to the exports of goods and services. This ratio is relevant for, in one hand, it takes into account both the stocks of debts and the levels of interests; in the other hand, the burden of the debt disappears as soon as the debtor country cancels his payments.

The payments of interests as percentage of the exports of goods and services has experienced a certain stability at 5 percent since 80' then decreases to stay at 3 percent with the massive cancellation of most of Sub Saharan Africa whereas Latin American ratio reached 23% in the 80' then 12% in the 90' and follows trendily its decrease. Globally, the weakness of the indicators of the sub-Saharan debt is not surprising in itself. This situation would be explained through the fact that, though they are evicted from the international capital markets many sub-Saharan countries do not mainly resort to multilateral and bilateral loans and this is basically in concessional terms. However, a cancellation is possible in the bilateral part.

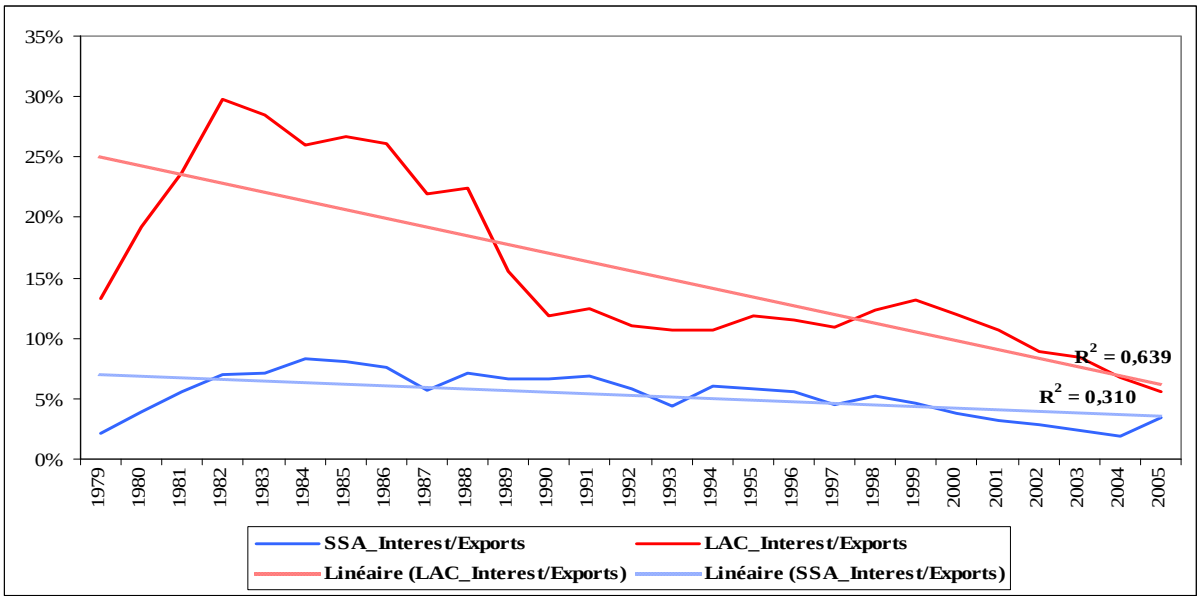

Figure 2: Comparison of interest payments on exports of goods and services between Sub Saharan Africa (SSA) and Latin America and the Caribbean (LAC)
Source: Author on World Bank data. Global Development Finance. 2008

Through the exclusive lenses of the standard tools of analysis of the sovereign over borrowing, the perception of the weight of the debt of sub-Saharan Africa suffers from many wrong ideas. The real concerns which are aroused do not always depend on the weight of the debt but on other factors. Between 1980 and 1990, Mathew Martin (1991) had already observed the persistence of the sub-Saharan debt in the international economic debates whereas its liabilities were only of 156 billions USD, which is 12 percent of the liabilities of the debt of developing countries and only 20 milliards USD more than the Brazilian debt. What was problematic was not really the amount but rather the context of real concerns linked the relative weight of the debt which came along with other economic

difficulties. This largely contributed to undermine the trust of the national and international economic actors affecting thus negatively their investments in particular the FDI.

I-2/ FDI flows in Africa: a noticeable and insufficient improvement

In general, Africa is confronted to the main problem of sustained stimulation of the economic growth. One of the first targeted levers is based on the improvement of the environment of investment which has been weakly dynamic in Africa. Before 2000, the inward FDI flows in Africa are globally marginal comparatively to Latin America and the Caribbean countries. In the 2000', the FDI flows remain more important in Latin America and the Caribbean countries which increased 4 times between 2000 and 2007 even if the FDI towards Africa have been multiplied by 8 in the same period. Moreover, the part of the gross private capital flows related to the GDP is weak as well, causing thus the apparition of two main problems. On one hand, Sub-Saharan Africa would not benefit sufficiently from potential contributions of foreign private investments: domestic investment, domestic financial development, technology spillover and the productivity of investment (Fuchs-Schünden and Funke, 2001). On the other hand, the continent is almost dependent of the Official Development Assistance (ODA), unpredictable and declining.

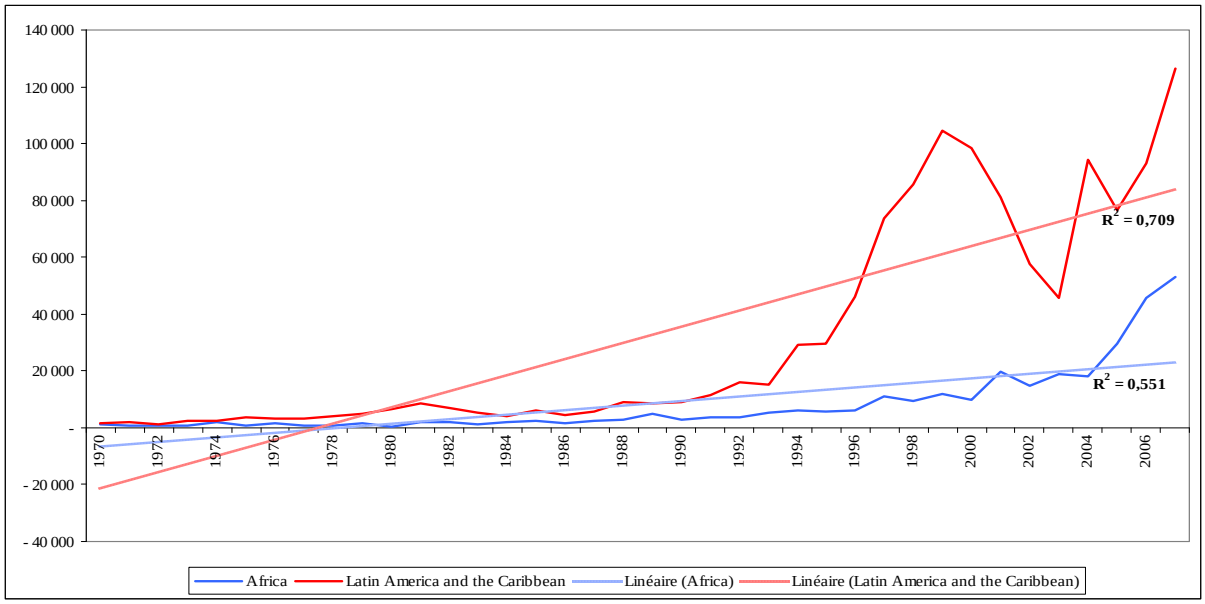

Figure 3 : Inward FDI flows in Africa and Latin America and the Caribbean, 1970-2007
Source: Author on World Bank data. Global Development Finance. 2008

The FDI have experienced a regular increase in Africa with a superior landing from 1997. A strong recovery is noticeable since 2004 due to liberal policies launched in the continent (signatures of bilateral agreements with the European Union and the United States of America, speeding-ups of initiative such as the AGOA[3]). Globally, since 2004, the FDI flows have increased in 36 African countries and have decreased in 17 countries the year before.

[3] Extension until 2015 of the American law on the growth and the potentialities of Africa (AGOA).

It is above all countries rich in natural resources (Angola, Equatorial Guinea, Nigeria and Sudan) which attracted investments from multinational enterprises. Other sectors like the services and manufacturing industries have, to a lesser extent, benefited from FDI. In a general way, North Africa remains a privileged destination for this type of investments thanks in particular to the strengthening of the operations of relocations and of the established dynamic tourist policies. More than a third of the investments made in Africa remain devoted to North Africa. Morocco remains the first beneficiary of the FDI and has succeeded in strengthening his positions in 2003.

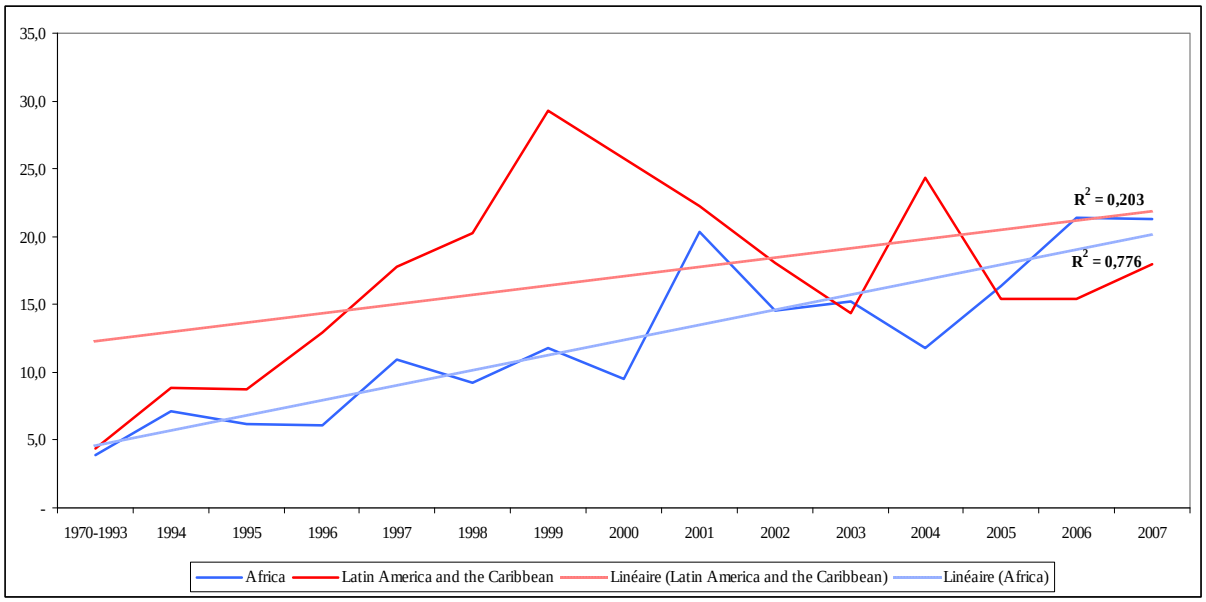

Figure 4 : Inward FDI flows as a percentage of GFCF in Africa and Latin America and the Caribbean, 1970-2007
Source: Author on Unctad data. World Investment Report. 2007

The proportion of the FDI as percentage of the gross fixed capital formation has also improved itself but it knows some fluctuations. During a long time, the African ratio was below those Latin American and the Caribbean. Since 2004, a reverse movement can be observed. This ratio was in the low bracket of the noticed average in the developing countries in the late 90's and at the beginning of 2000. It has considerably increased in order to be above the average of Latin American countries not to say the developing countries. The growth of the FDI in Africa beyond 2004 seems to be strong thanks to the potentialities in natural resources of the continent, the dynamism of the global markets of commodities and the change of the frame of mind of the investors due to the efforts made in terms of the structural adjustment conducted in most of the countries. But, the way to go is still long. An effort of sustained adjustment should be maintained vis-à-vis the Latin American countries subjected to a continuous decline of the proportion of FDI flows on GFCF.

This effort seems to be taken into account in the strategic documents of the NEPAD which, besides the fact of pacifying the continent and adapting the economies, put an emphasis in particular on an active and sustained policy of the stimulation of the FDI flows. This perspective coincides with the purposes

of the debt-equity swaps. To get oriented towards these mechanisms presents a double interests: on one hand, it gives a partial alternative which resorts systematically to the international assistance and on the other hand, it sends a strong signal encouraging the investors to get interested in the economic projects initiated by the Nepad.

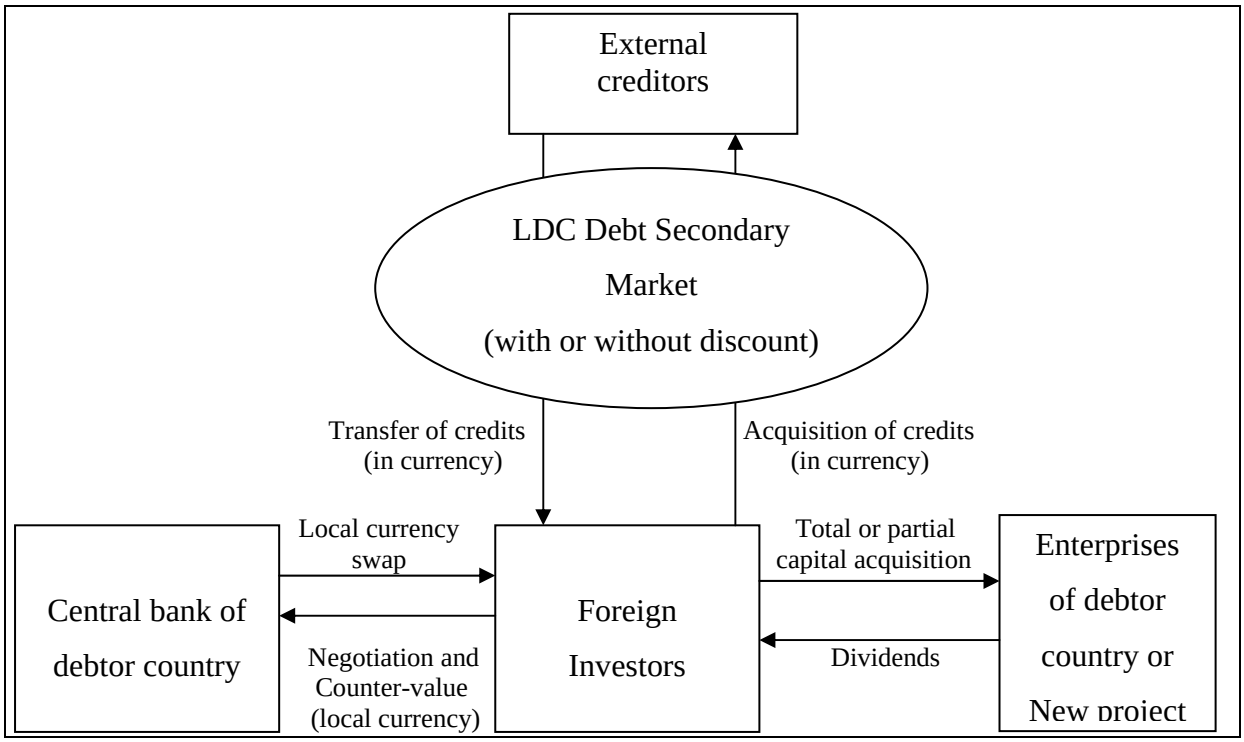

Figure 5 : Debt-equity swaps - example of transaction
Source: Author

II- MODEL OF DEBT-EQUITY SWAPS

We will first set out the founding hypotheses of the model before proceeding to the determination of the analytical framework.

II-1/ The founding assumptions

The basic hypotheses of our model are the following ones:

- The indebted country has yearly reel revenue, considered as a random variable.
- The external debt of the country is completely held by the public authorities either directly or indirectly trough the "socialisation" of the private debts.
- The model accepts as participants to the program of debt-equity swap three economic agents (the debtor country, the foreign creditors and the foreign investors). They are neutral to the risks. It is agreed that there are other economic residents' agents for whom the model modifies the resources though they are not active.
- There is a control over the international capital movements so that all the industrial assets are held by the residents of debtor country.
- The economic agents taking part in the transactions are supposed to act so that their actions cause a situation of improved indebtedness for the debtor country.

II-2/ Analytical framework

In order to face variable revenue, a country gets into debt by undertaking to invest in a project allowing him to repay the debt. We conform to standard models of debt by considering two periods of analysis. The first one t=0 during which the debt and the investment are carried out. The second one t=1 during which the programs of debt-equity swaps are settled and the revenues generated by the investment project, are used for repaying partially or totally the residual debt (difference between the initially incurred debt and the reductions conducted through the debt-equity swaps). At the end of this period, there is a liquidation of the project and all the assets are sold.

The model will be established in three stages.

1srt Stage: emergence of an idea of the investment project

Let us consider a country where an investment project is realised which is of a global value I at $t=0$. The project is supposed to produce at $t=1$ a volume Q defined by $Q = \Phi A$.

The coefficient Φ illustrates the states of nature which are associated to the investment project and A the level of activity, function of the assets held by the firms which are embarked on the production of the investment project. To illustrate the transition from unfavourable hazards to favourable ones, we make Φ evolve towards Φ' with Φ' preferred to Φ ($\Phi' > \Phi$). The future value expected from the investment project can be described by the following relation: $V = \int_0^{\Phi_m} p(\Phi)Q(\Phi)d\Phi$

2nd stage: situation prior to the establishment of debt-equity swaps

In the initial situation, a country holds at $t=0$, an external debt D while undertaking to repay $D(1+r)$ at $t=1$ due to the payment of debt service (principal and accrued interests).

Let us suppose that the resources of the debt are used for financing partly or totally the initial investment of the project described in the first stage. This hypothesis, explicit for Bowe and Dean (1993) but not at all for Helpman (1989), is a main characteristic of the project. Indeed, if these resources were funds or were reserved to the purchase of other assets, the debt should be held, at least partially, in the form of funds or other assets and not, as it is supposed by Helpman (1989), in the form of opportunities for investment.

To face its commitment in the repayment of the external debt $D(1+r)$ at $t=1$, the debtor country has a capacity of the taxation of the incomes generated by the investment project. The taxation is carried out at the rate of exogenous taxation τ. So, the importance of the transfers of resources from the debtor country to the foreign creditors remains dependent on the value made available by the investment project. We share this hypothesis common to Helpman (1989) and Bowe and Dean (1993), who estimate that the product collected during the taxation of the investment project is the only source of income of the debtor country. This proposition simplifies a lot the reality. Indeed, when the state invests directly in a firm, whether it is part of the minority or the majority, it receives a charge.

However, we keep the hypothesis of Helpman (1989) and of Bowe and Dean (1993) in order to avoid cramming our model. In addition, between $t=0$ and $t=1$, the state of nature Φ is going to reveal itself.

The fact that the debtor country has as only resource the taxes on the investment project reduces its field of action. If this latter appears insufficient for covering the debt service, the risks of non-payment become real. In this case, $\Pr ob[\tau Q<D(1+r)]>0$ so $\Pr ob[\tau \Phi A<D(1+r)]>0$. Thus, there is a value Φ so that $\Phi^* = \dfrac{D(1+r)}{\tau A}$ **[1a]** below which the payment of the debt would not be ensured.

As Helpman (1989) supposed it, for values $\Phi < \Phi^*$, the debtor country transfers to the foreign creditors the whole incomes of the taxation. This hypothesis is too much heavy because any State has to face certain incompressible expenses (functioning expenditures for instance). We relax it by considering that a portion η of the collected taxes remains at with the debtor country. Thus, for values $\Phi < \Phi^*$, the creditors receive the disposable income (taxes minus incompressible expenses) as debt reimbursement even if the collected taxes appear to be insufficient. For values $\Phi > \Phi^*$, the surplus of the disposable income over the payment of the debt is partly (thus portion α) devoted again to all the economic resident agents of the debtor country agents as such the global transfers. The residual portion $(1-\alpha)$ is held by the State. Therefore, the result **[1a]** turns into $\Phi^* = \dfrac{D(1+r)}{\tau A(1-\eta)}$ **[1b]**.

Let us remind also that the models of Helpman (1989), Bowe and Dean (1993) accepts only two kinds of participants: the foreign creditors considered as being investors and the debtor country too. However, it is more pragmatic to distinguish the foreign creditors from possible investors, considering the foundations of the debt-equity swaps.

It is in this context that we attempt at identifying the resource allocation between the main participants in the debt-equity swaps transactions.

The residents of the debtor country will receive, in the unfavourable states of nature ($\Phi \le \Phi^*$), the product after the taxation of the investment project since they are the only holders of assets. In the favourable state of nature ($\Phi > \Phi^*$), they will have the set constituted of the product after taxation and a portion α of the global transfers. $\begin{cases} (1-\tau)\Phi A \\ (1-\tau)\Phi' A + \alpha[\tau\Phi' A(1-\eta) - D(1+r)] \end{cases}$ for $\begin{cases} \Phi \le \Phi^* \\ \Phi > \Phi^* \end{cases}$ **[2a]**

As for the foreign creditors, their resources will consist of all the disposable income in the unfavourable states of nature and the complete payment of the debt in favourable states.

$$\begin{cases} \tau\Phi A(1-\eta) \\ D(1+r) \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^* \\ \Phi > \Phi^* \end{cases} \qquad \textbf{[2b]}$$

The debtor country will have at its disposal the resources which are used for covering the incompressible expenses in the unfavourable states of nature. They will obtain the set made up of the

resources of incompressible expenses and of the portion $(1-\alpha)$ of the global transfers which are not devoted again to the resident agents in the favourable states of nature.

$$\begin{cases} \eta\tau\Phi A \\ \eta\tau\Phi' A + [\tau\Phi' A(1-\eta) - D(1+r)](1-\alpha) \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^* \\ \Phi > \Phi^* \end{cases} \qquad \textbf{[2c]}$$

The foreign investors do not receive any resource as they are not yet present in the country.

3rd stage: situation which comes after the establishment of the debt-equity swaps

The program of debt-equity swaps is going to ensure the exchange of a part d of the liabilities of the external debt D, bought out in the secondary market by foreign investors in compensation of partial or complete capital acquisition of the firms in the debtor country.

Thus, we put forward new assumptions:

- The rate of taxation τ remains unchanged.
- The exchange of the debt ensures to the debtor country to be at a better level of indebtedness characterised by the residual debt $D^* = D - d$. Through this assumption, we carry out a bet on the rationality of the economic agents by supposing that the reduction of the debts recovers in the sense that if it brings them to a more improved level than before. Consequently, we estimate that the residual debt will be completely repaid at the due date in the states of nature $\Phi > \Phi^*(d)$ so that

  $\Pr ob[\tau\Phi(d)A(1-\eta) \ge (D-d)(1+r)] > 0$ hence $\Phi^*(d) = \dfrac{(D-d)(1+r)}{\tau A(1-\eta)}$. It is important to remind that $\Phi(d) < \Phi^*$.
- At $t = 1$, the project comes to an end. We suppose that the assets are then transferred during this period. We remind that the transfer of assets is treated according to the rules of general accounting. Indeed, the product of the transfer of the assets is considered as exceptional products which are an element of the final result. Thus, a simple distribution of the product of the transfer would not be considered as possible. We suppose that in the unfavourable states of nature, the activity is low and the result is weak. On the other hand, in the favourable context, the result reaches a superior level.

There is going to be two situations: one in which the program of the debt-equity swaps ensures the foreign investors to proceed to a partial capital acquisition of the project so that only one portion of the activity would be for them $(a < A)$. Another one characterised by a complete capital acquisition of the investment project such as $a = A$, not to say the creation of a new equivalent project.

i. Debt-equity swaps with partial capital acquisition of the project

In the model of Bowe and Dean (1993), the foreign creditors buy out a portion of the debt so as to take a stake in the investment project. The foreign creditors are the investors themselves. We are going to

study this case. However, in order to be more conformed to a certain reality of the debt-equity swaps; we are going to dissociate these two types of economic agents. Thus we suppose that the creditors are more motivated by the recovery, even partial, of their items whereas the foreign investors want both to benefit from the business opportunities of the debtor country and to profit from the discount rate on the secondary market of the debt. We are all the more consolidated in this hypothesis that in many creditors' native countries, strong constraints would tend to limit the capital acquisition of their banks in foreign countries.

A- Foreign creditors and foreign investors are not confused

The implementation of the debt-equity swaps significantly modifies the allocation of resources.

The residents of the debtor country will receive in the unfavourable states of nature, the product after taxes on the residual activity which is the one taking into account the transfer of a portion of assets to foreign investors. In the favourable states of nature, they will have the product after the tax on the residual activity and a portion α of the global transfer representing the surplus of the disposable income over the payment of the residual debt.

$$\begin{cases} (1-\tau)\Phi(A-a) \\ (1-\tau)\Phi'(A-a)+\alpha[\tau\Phi' A(1-\eta)-(D-d)(1+r)] \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[2a]}$$

The resources of the foreign creditors will consist, in the unfavourable states of nature, of the disposable income generated by the activity. In the favourable states of nature, they will receive the complete payment of the residual debt.

$$\begin{cases} \tau\Phi A(1-\eta) \\ (D-d)(1+r) \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[2b]}$$

For the foreign investors, the resources are of the net product after taxes in proportion to their participation in the unfavourable states of nature. This would equal to a sort of payment of dividends. In the favourable ones, they will receive a product after tax but of a bigger amount than the time before due to the improvement of the economic situation of the debtor country.

$$\begin{cases} (1-\tau)\Phi a \\ (1-\tau)\Phi' a \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[2c]}$$

The debtor country will have at its disposal as resources in the unfavourable states of nature, the residual part of the collected taxes which ensure him to cover the level of incompressible expenses. In the favourable states of nature, he will receive in addition to its part which is not devoted to the residents of global transfers emanating from the surplus of the net product of the taxes on the payment of the residual debt:

$$\begin{cases} \eta\tau\Phi A \\ \eta\tau\Phi' A+[(\tau\Phi' A(1-\eta)-(D-d)(1+r)](1-\alpha) \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[2d]}$$

B- Foreign creditors and foreign investors are not confused

From a transaction with three participants, we are going to another one with two directs participants. In this case, only the allocation in resources of the foreign creditors are going to be modified because they get more than it should be received the isolated foreign investors.

$$\begin{cases} \tau\Phi A(1-\eta)+(1-\tau)\Phi a \\ (D-d)(1+r)+(1-\tau)\Phi' a \end{cases} \text{ for } \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[2e]}$$

ii. Debt-equity swaps with total capital acquisition of the project

The foreign investors hold all the capital of the investment project (a = A) and hoard the totality of the product after taxes on the project. There is going to be two cases.

A- Foreign creditors and foreign investors are not confused

The residents of the debtor country have no resources in the unfavourable states of nature except the wages from the project. The net product of the taxation on the total activity is transferred to foreign creditors whereas the product after taxes remains at the disposal of the foreign investors which have become the only owners of the project. In the favourable states of nature, they get, in addition to the wages, a portion α of global transfers representing the net incomes of taxation over the complete payment of the residual debt.

$$\begin{cases} S \\ S+\alpha[\tau\Phi' A(1-\eta)-(D-d)(1+r)] \end{cases} \text{ for } \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[3a]}$$

Thanks to the foreign creditors, they get the totality of the net incomes generated by the taxation on the total activity of the investment project in the unfavourable states of nature. In case of favourable hazards, they get the complete payment of the residual debt.

$$\begin{cases} \tau\Phi A(1-\eta) \\ (D-d)(1+r) \end{cases} \text{ for } \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[3b]}$$

As for the investors, they get the product after taxes on the total activity of the investment project in the unfavourable states of nature. In the favourable states of nature, they benefit from the product after taxes on the total activity and it is reasonable to suppose that this last amount is superior considering the improvement of the economic situation of the debtor country.

$$\begin{cases} (1-\tau)\Phi A \\ (1-\tau)\Phi' A \end{cases} \text{ for } \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[3c]}$$

The debtor country will have an invariable level.

$$\begin{cases} \eta\tau\Phi A \\ \eta\tau\Phi' A+[(\tau\Phi' A(1-\eta)-(D-d)(1+r)](1-\alpha) \end{cases} \text{ for } \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \quad \textbf{[3d]}$$

B- Foreign creditors and foreign investors are confused

Only the allocations to the foreign creditors will be modified. In the unfavourable states of nature, they will get the net product of the taxation on the investment project and the product after taxes

$[(1-\tau)\phi A + \tau\Phi A(1-\eta)]$. In the favourable states of nature, they will get the global payment of the residual debt to which we add the product after taxes.

$$\begin{cases} \tau\Phi A(1-\eta) + (1-\tau)\Phi A \\ (D-d)(1+r) + (1-\tau)\Phi' A \end{cases} \quad \text{for} \quad \begin{cases} \Phi \le \Phi^*(d) \\ \Phi > \Phi^*(d) \end{cases} \qquad \textbf{[3d]}$$

II-3/ Synthesis of the results of the model and main lessons

Some fundamental results develop different studied scenarios. First the implementation of the debt-equity swaps increases the favourable states of nature to the effective payment of the residual debt (like $\Phi^*(d) < \Phi^*$). This is explained by the sense given to the reduction of the facial value of the initial debt. We have stated it earlier in our initial hypothesis. This intuition results from the bet we carried out on the rationality of the actors of the transaction which do not proceed to these operations only if there is an opportunity to reduce the debts to a level less higher which was to be completely repaid.

Secondly, an analysis costs – benefits of the situation of the different participants in the transactions leads to much contrasted situations. It is convenient to precise that the comparisons are made in function of the states of the nature: first the unfavourable states of nature and then the favourable ones. We also notice that the earnings of all the actors increase with the improvement of the hazards.

Residents of the debtor country: they are the agents for whom the adoption of debt-equity swaps is a fact in which they do participate neither at the beginning nor while carrying out the transactions. Their resources decrease with the implementation of these mechanisms.

In the unfavourable hazards, their incomes decrease till they are only formed of the wages while the capital acquisition is complete. This situation would be explained by the fact that they do not participate directly to the transactions.

In the favourable hazards, a loss of income intervenes progressively between the partial capital acquisition and the total one.

Foreign creditors:

In the unfavourable hazards, the expected incomes do not vary whether it is in presence or not of debt-equity swaps. They will receive the product of the disposable income (taxes minus incompressible expenses of the State).

In the favourable hazards, they lose a portion of their resources. Indeed, since they cannot receive the totality of their claims, they get more than the payment of the residual debt when the debt-equity swaps are implemented. In this situation, they are neutral to the degree of capital acquisition of the project.

Foreign investors: they are the winners in these operations. Though they have discharged an import duty in order to contribute to the transactions, we notice that their incomes increase in function of the

degree of capital acquisition of the project. In other words, the more important this one is, the higher the earnings are. When the capital acquisition is complete, they get the entire product after tax.

Debtor country:

In the unfavourable hazards, the resources remain invariable and are made of the residual part of taxes ensuring the covering of incompressible expenses. In favourable hazard, they increase with the debt-equity swaps while remaining stable in spite of the degree of capital acquisition of the project.

Creditor-Investor: in this case, the foreign creditors are confused with the foreign investors.

In the unfavourable hazards, the resources increase with the implementation of debt-equity swaps. This increase is more definite when the capital acquisition of the project is complete.

In the favourable hazards, the comparison of obtained resources between the complete and the partial capital acquisition remains favourable to the agents because they continue to increase. The comparison between situation prior to or following the implementation of debt-equity swaps is uncertain. Everything would depend then on the incomes of activity gotten from the project in relation to the loss because of the reduction of the initial debt. Thus, the performances realised with the implementation of the project are integrated in the earnings of the creditors-investors.

The evaluation of the resources of the implementation of the debt-equity swaps cannot lead to a definitive and globalising conclusion. The opportunities of earnings depend on one's point of view.

Conclusion

In front of permanent and increasing challenges of the African continent, the NEPAD aims to find efficient, lasting and feasible solutions. It provides a strategic framework by defining a certain number of priorities among which the reduction of the debt and the stimulation of the FDI flows are. Our study fits into this perspective and proposes a combined action going from the resort to mechanisms of debt-equity swaps. However, as these ones have been very controversial, we seek to evaluate them from a perspective of costs-benefits by focusing on the variations of monetary cash of the different participants in the transactions. Our inability in expressing a global and definitive judgement on the implementation of these mechanisms of market is based on the existence of earnings or potential losses of resources according to the adopted point of view. Indeed, the evaluation of the debt-equity swaps in terms of allocation of resources comes to an end through diverse fortunes for the different participants to the transactions. The foreign investors are the winners in these transactions in all the states of nature. For the debtor country, the programs are financially interesting in the favourable states of nature whereas the resources remain stable when the hazards are unfavourable. On the other hand, the potential losses are possible in all the states of nature for the residents of the debtor country which, at the beginning, had the entire assets. When the hazards are favourable, these transactions cause the losses of resources for the creditors which, however, manage in keeping their level of incomes in the unfavourable states of nature. In order to expect to be winners in any ways, the creditors have to be

also the investors on the condition that they also accepts the idea of taking into account the economic performances of the debtor country in the determination of the potential earnings.

Bibliography

African Union. (2002). “Towards the Implementation of the New Partnership for Africa’s Development (NEPAD): Progress Report and Initial Action Plan”, Addis Abeba : AU.

Bowe M., Dean J. W. (1993). “Debt-equity swaps: Investment Incentive Effects and Secondary Market Prices”, Oxford Economic Papers. 45: 130-145.

Bulow J. L., Rogoff K. (1988). “The Buy-back Boondoggle. Brookings Papers on Economic Activity”, N° 2: 675-704

Cline W. R. (1995). “International Debt re-examined”, Institute for International Economics. Washington DC: 535

Dezderi K., Marcelle G. (1988). “Debt-equity swaps: Solution to a Crisis?”, Economie Appliquée, Tome XLI. N° 4: 821-855

Dooley M. P. (1988). “Buy-backs and Market Valuation of External Debt”, IMF Staff Papers, N° 35: 215-229

Dornbusch R. (1985). “Our LDC Debt”, In M. Feldstein eds., The United States in the World Economy. NBER: 694

Eclac. (1999). “Finding Solutions to the Debt Problems of Developing Countries”, Report of the Executive Committee on Economic and Social Affairs of the United Nations, Temas de Coyunctura, Santiago, 22

Franke N., Nsouli S. M. (2003), “The New Partnership for Africa’s Development NEPAD : Opportunities and Challenges”, IMF Working Paper, Washington DC. April. 34

Fuchs-Schünden N., Funke N., (2001). ”Stock Market Liberalizations: Financial and Macroeconomics Implications”, IMF Working Paper 01/193, Washington: IMF, 41 p.

Helpman E. (1989). “The Simple Analytics of Debt-equity swaps. American Economy Review”, June, N° 3: 440-451.

Krugman P. R. (1988). “Financing versus Forgiving a debt Overhang: some analytical notes”, Journal of Development Economics, Vol. 29: 253-268.

Krugman P. R. (1989), “Market-Based Approaches to Debt-Reduction Schemes”, in Frenkel J.. Dooley M. P., P. Wickham. Analytical Issues in Debt. IMF. Washington DC. 258-278.

Martin M. (1991), “The Crumbling Facade of African Debt Negotiations: No Winners”, MacMillan Academic and Professional Ltd. 1-14

Nepad. (2001). “The New Partnership for Africa’s Development”, October.

Nepad. (2002a). “The New Partnership for Africa’s Development: The African Peer Review Mechanism”, APRM. June.

Nepad. (2002b). “Summary of NEPAD Initial Action Plans”, June.

Nepad. (2002c). “Declaration on Democracy, Political, Economic and Corporate Governance”

Nepad. (2002d). “Report to the Heads of State Implementation Committee”, July-October.

Nepad. (2002e). “Issued at the End of the Fifth Summit of the HSIC of the New Partnership for Africa’s Development”, Abuja, November.

Sachs J. (1988). “Comprehensive Debt Retirement: the Bolivian Example”, Brooking Papers on Economics Activity, N° 2: 705-715.

Unctad. (2008). “World Investment Report”

World Bank. (2008). “Global Development Finance”, Cd Rom